

**WHAT IS CLAIMED IS:**

1. A motion detection system comprising:

a first sensor sensitive to light in a first range of wavelengths in at least one detection zone and generating a first output signal representative of the detected level of light in said first range;

a second sensor sensitive to light in a second range of wavelengths differing from said first range and generating a second output signal representative of the detected level of light in said second range, said second sensor being positioned proximate said first sensor; and

a processor programmed to generate an alarm signal based upon said first and second output signals wherein said alarm signal is generated when first and second conditions are satisfied, said first condition being satisfied when said first output signal indicates motion has occurred in the at least one detection zone and said second condition being satisfied when the second output signal does not correlate to the first output signal.

2. The motion detection system of claim 1 wherein said first sensor is a pyro-electric sensor and said first range of wavelengths includes wavelengths of approximately 7 to 14  $\mu\text{m}$ .

3. The motion detection system of claim 1 wherein said first output signal is compared to a first threshold value and said second output signal is compared to a second threshold value and both said first output signal must exceed said first threshold value and said second output signal must exceed said second threshold value when said second condition is not satisfied.

4. The motion detection system of claim 3 wherein said second condition is not satisfied only when said first output signal exceeds said first threshold value beginning at a first time and said second output signal exceeds said second threshold value beginning at a second time and said first and second times are separated by no more than a predetermined time delay value.

5. The motion detection system of claim 1 further comprising:

a first high threshold comparator and a first low threshold comparator operatively disposed between said first sensor and said processor, said first high threshold comparator generating a first high threshold flag signal when said first output signal exceeds a first high

threshold value, said first low threshold comparator generating a first low threshold flag signal when said first output signal exceeds a first low threshold value;

a second high threshold comparator and a second low threshold comparator operatively disposed between said second sensor and said processor, said second high threshold comparator generating a second high threshold flag signal when said second output signal exceeds a second high threshold value, said second low threshold comparator generating a second low threshold flag signal when said second output signal exceeds a second low threshold value; and

wherein said second condition is not satisfied when both said first output signal exceeds one of said first threshold values and said second output signal exceeds one of said second threshold values and said first output signal exceeds said one first threshold value beginning at a first time and said second output signal exceeds said one second threshold value beginning at a second time and said first and second times are separated by no more than a predetermined time delay value.

6. The motion detection system of claim 5 wherein said one first threshold value and said one second threshold value are either both high threshold values or both low threshold values.

7. The motion detection system of claim 5 wherein said comparators are all voltage comparators.

8. The motion detection system of claim 5 wherein said predetermined time delay value is no greater than approximately 60 milliseconds.

9. The motion detection system of claim 1 further comprising a filtering element disposed between said first sensor and said at least one detection zone wherein said filter inhibits the passage of light having predetermined wavelengths.

10. The motion detection system of claim 9 wherein said filtering element is a pigmented fresnel lens.

11. The motion detection system of claim 1 wherein there are a plurality of detection zones.

12. The motion detection system of claim 1 wherein said first sensor is a pyro-electric sensor and said first range of wavelengths includes wavelengths of

approximately 7 to 14  $\mu\text{m}$  and said second range of wavelengths has an upper limit less than 7  $\mu\text{m}$  and includes wavelengths greater than 400 nm.

13. The motion detection system of claim 1 wherein said first sensor is a pyro-electric sensor and said first range of wavelengths includes wavelengths of approximately 7 to 14  $\mu\text{m}$  and said second sensor is sensitive to at least a portion of visible light having wavelengths between 400 nm and 700 nm.

14. The motion detection system of claim 1 wherein said first sensor is a pyro-electric sensor and said first range of wavelengths includes wavelengths of approximately 7 to 14  $\mu\text{m}$  and said second sensor is sensitive to near infrared light having a wavelength of approximately 1  $\mu\text{m}$ .

15. A method of detecting motion, said method comprising:  
detecting motion in at least one detection zone by sensing, at a first position, infrared light emitted from the at least one detection zone;

sensing visible light proximate said first position;

generating a motion detection signal when both a) motion is detected in the at least one detection zone by sensing infrared light emitted from the at least one detection zone and b) the detection of motion is based upon a change in the sensed infrared light that does not correlate to a change in the sensed visible light.

16. The method of claim 15 wherein said step of detecting motion comprises sensing light that includes infrared light having a wavelength within a range of approximately 7 to 14  $\mu\text{m}$ .

17. The method of claim 15 wherein determining if the detection of motion is based upon a change in the sensed infrared light not correlating to a change in the sensed visible light includes comparing a first signal representative of the sensed infrared light to a first threshold value and comparing a second signal representative of the sensed visible light to a second threshold value and finding a correlation only when the first signal exceeds the first threshold at a first time and the second signal exceeds the second threshold at a second time and the first and second times are separated by no more than a predetermined time delay value.

18. The method of claim 17 wherein said predetermined time delay value is no greater than approximately 60 milliseconds.

19. The method of claim 17 wherein a pyro-electric sensor sensitive to light that includes light having a wavelength within a range of approximately 7 to 14  $\mu\text{m}$  is used to sense infrared light emitted from the at least one detection zone.

20. The method of claim 19 wherein a cadmium-sulfide photocell is used to sense visible light proximate the first position.

21. A motion detection system comprising:

a first sensor capable of detecting light in both an infrared frequency range and a first visible frequency range;

a second sensor capable of detecting light in a second visible frequency range; and

a processor in communication with each of said first sensor and said second sensor and configured to generate an alarm signal only if:

said first sensor detects at least a first threshold level of light occurring during a time period; and

said second sensor detects less than a second threshold level of light occurring during said time period.

22. The motion detection system of claim 21 wherein said second visible frequency range overlaps said first visible frequency range.

23. The motion detection system of claim 21 wherein said second visible frequency range is approximately equal to said first visible frequency range.

24. The motion detection system of claim 21 wherein said second sensor is configured to detect a source of a false alarm.

25. The motion detection system of claim 21 wherein said second sensor is positioned proximate said first sensor.

26. The motion detection system of claim 21 wherein said first threshold level is a first predetermined amount greater than a baseline level of light detected by said first sensor, and said second threshold level is a second predetermined amount greater than a baseline level of light detected by said second sensor.

27. The motion detection system of claim 21 wherein said first sensor is sensitive to a first range of wavelengths that includes wavelengths of approximately 7 to 14  $\mu\text{m}$  and said second sensor is sensitive to a second range of wavelengths that has an upper limit less than 7  $\mu\text{m}$  and includes wavelengths greater than 400 nm.

28. A method of detecting motion, said method comprising:

- using a first sensor to detect a change in light level within a first range of wavelengths indicative of one of the motion and a source of a potential false alarm;
- using a second sensor to detect a change in light level within a second range of wavelengths indicative of said source of a potential false alarm; and
- issuing a signal indicative of the motion only if said first sensor detects said change in light level within said first range of wavelengths and said second sensor fails to detect a corresponding change in light level within said second range of wavelengths.

29. The method of claim 27 wherein said source of a potential false alarm comprises a source of visible light.

30. The method of claim 28 wherein said first range of wavelengths includes light having wavelengths of approximately 7  $\mu\text{m}$  to 14  $\mu\text{m}$  and said second range of wavelengths has an upper limit less than 7  $\mu\text{m}$  and includes light having a wavelength of greater than 400 nm.

31. The method of claim 27 further comprising positioning said second sensor proximate said first sensor.

32. The method of claim 27 wherein said signal is issued only if said second sensor fails to detect said corresponding change in light level within said second range of wavelengths within a predetermined time period one of before and after said first sensor detects said change in light level within said first range of wavelengths.

33. The method of claim 31 wherein said predetermined time period is no greater than approximately 60 milliseconds.

34. A method of detecting motion, said method comprising:

- using a first sensor to detect a change in light level within a first range of wavelengths indicative of one of the motion and a source of a potential false alarm;

generating a signal indicative of motion if the first sensor detects said change of light within said first range of wavelengths;

using a second sensor to detect a change in light level within a second range of wavelengths indicative of said source of a potential false alarm; and

suppressing all signals indicative of the motion generated by said first sensor for a predefined time period when said second sensor detects said change in light level within said second range of wavelengths.

35. The method of claim 33 wherein said source of a potential false alarm comprises a source of visible light.

36. The method of claim 34 wherein said first range of wavelengths includes wavelengths of approximately 7  $\mu\text{m}$  to 14  $\mu\text{m}$  and said second range of wavelengths has an upper limit less than 7  $\mu\text{m}$  and includes light having a wavelength of greater than 400 nm.

37. A motion detection system comprising:

- a first sensor sensitive to light in a first range of wavelengths;
- a second sensor sensitive to light in a second range of wavelengths;
- a processor in communication with each of said first and second sensors and configured to generate an alarm signal based upon signals received from each of said first and second sensors; and
- a light emitting device in communication with said processor, said light emitting device disposed in a externally visible position on said system and wherein said second sensor is sensitive to visible light and said processor is configured to adjust a brightness of said light emitting device in response to changes in ambient visible light levels.

38. The motion detection system of claim 36 wherein said light emitting device is a light emitting diode, and said first range of wavelengths includes wavelengths of approximately 7  $\mu\text{m}$  to 14  $\mu\text{m}$  and said second sensor is sensitive to at least a portion of visible light having wavelengths between 400 nm and 700 nm.